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COAL BEDS IN CENTER, CAMERON, CLINTON AND LYCOMING COUNTIES,
PENNSYLVANIA

By

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CENTER COUNTY

In 1918 Center County ranked eleventh in Pennsylvania as a bituminous coal producing county. In that year, 1,984,664 tons, valued at \$5,685,985 were produced, and distributed as follows: 1,962,108 tons, valued at \$5,628,211; were loaded at the mines for shipment; 19,793 tons, valued at \$50,215 were sold to local trade and used by employees; 2,763 tons, valued at \$7,559 were used at the mines for steam and heat. No coal was coked at the mines.

There are eight coal beds in Center County. The Lower Kittanning and Lower Freeport are the most important. The Brookville, Middle Kittanning, Upper Kittanning and Upper Freeport coals are locally important. The Clarion and Mercer coals are thin and unimportant.

Center County is in the central part of the State. It is bounded on the north and northeast by Clinton County, on the east by Union County, on the south by Mifflin, Huntingdon and Blair counties, and on the west by Clearfield County. Its greatest width from east to west is 48 miles, and from north to south 37.5 miles. Its area is 1,146 square miles. Its 1920 population was 44,304.

The coal districts of Center County are served by two railroads. The Pennsylvania Railroad, entering the county from the south at Gardner, serves the Sandy Ridge, Osceola and Philipsburg district. A branch line from Snow Shoe intersection, in the central part of the

county, serves the Snow Shoe district.

The New York Central and Hudson River Railroad enters the county near Peale, runs northeast through the mining districts of Moshannon and Snow Shoe, and follows Beech Creek to the eastern edge of the county.

All the highways in the coal districts are dirt roads. Coal for local use is transported over them.

The coal districts are on the west flank of Allegheny Mountain, in very rugged country. The streams flow through narrow valleys with outcrops of massive sandstone along their slopes.

STRUCTURE.

The coal districts are contained in two basins having a general northeast-southwest trend.

The principal basin contains the coal districts of Philipsburg - Moshannon - Snow Shoe and Beech Creek. The axis of the trough rises and falls, alternately lifting into the air and burying the coal beds.

The West Branch of the Susquehanna practically marks the trough of the second basin, which preserves a few acres of coal in the vicinity of Karthaus.

STRATIGRAPHY.

The coal beds of Center County are contained in the Allegheny and Pottsville formations of Carboniferous age.

The Allegheny formation is composed of massive sandstones, shales, limestones, clay beds, and several important coals.

The Pottsville formation is composed of massive sandstone, a few feet of shale, and an unimportant coal bed.

COAL BEDS.

There are two principal coal areas in Center County; the first lies southeast of Moshannon Creek, in Rush township; the second lies in Snow Shoe and Burnside townships, extending north and east from Snow Shoe. These areas are surrounded by outcropping Pottsville rocks, which form the larger part of the northwest flank of Allegheny Mountain.

Mercer Coal. This bed, about 60 feet below the Brookville coal, is thin and unimportant. It is generally less than 12 inches thick and is dirty.

Brookville ("A") Coal. This coal, lying on, or separated from the Pottsville sandstone by a few feet of shale, is generally a thin dirty bed, but locally is thick and has good quality. It is mined for shipping coal in Rush township. Between Sandy Ridge and Osceola the mineable coal is 3 feet 6 inches to 5 feet thick, thinning where roof "rolls" are present. The bed carries a top bony bench 12 inches thick.

The Brookville coal is opened at many places in Rush township, near Philipsburg, and ranges from 2 to 4 feet thick. It is generally rather dirty and high in sulphur, and invariably has a bony bench at the top 3 to 12 inches thick. Roof rolls make mining uncertain. Opposite Munson and Winburne the bed averages 3 feet thick, not including a 6 inch bony bench at the top. The coal has fair quality, but is rather high in sulphur.

The Brookville coal is mined on Cherry Run, Snow Shoe township. Here it is 3 feet 6 inches to 4 feet 2 inches thick, not including an 8 inch bony bench at the top. The coal is rather high in sulphur, and both roof and bottom are very rolly. At Kato the bed is 4 feet thick, not including the top bony bench, and is very rolly.

The Brookville coal has been opened by farmers in eastern Snow Shoe township and in Burnside township, but it is dirty, and high in sulphur. It averages 3 feet thick.

Clarion ("A'") Coal. This bed, lying 15 to 25 feet above the Brookville, is very thin and dirty in Center County. Attempts to mine it have been unsuccessful. It is locally 3 feet thick, but thins down to less than 12 inches within a few yards.

Lower Kittanning ("B") Coal. This coal, lying about 65 feet above the Brookville, is one of the important coals of Center County, and has furnished a large quantity of commercial coal.

Near Retort, the Lower Kittanning averages 4 feet 7 inches thick, including 6 inches of bone coal about 6 inches from the top; at Osceola, it is 4 feet 6 inches to 5 feet thick, not including a bony bench at the top, 12 inches thick. At Boynton it ranges from 4 feet to 4 feet 8 inches thick, not including a 12-inch bony bench at the top. The Lower Kittanning coal is mined extensively at South Philipsburg, where it ranges from 4 feet to 5 feet 6 inches thick. Here it carries numerous bony bands, and part of the coal is cannel-oid, high in ash. On One Mile Run the coal averages 4 feet 2 inches thick, and generally has 6 to 9 inches of bone coal 8 inches from the top. A 1-inch pyrite seam is invariably present 7 inches from the bottom. On North Run the coal averages 3 feet 6 inches thick, not including 12 to 15 inches of bone coal at the top. The roof is rolly, and in places cuts out the bony coal. Opposite Munson the coal is 3 feet 6 inches thick. It has a characteristic bony bench at the top, and local bony partings in the main bench. At Tunnel Mines the bed averages 3 feet 6 inches thick, including 6 inches of bony coal at the top, and a local bone parting 1 inch thick near the middle of the bed. The Lower Kittanning is opened near Gorton for house fuel;

it is 3 feet thick, but very impure.

In the Snow Shoe-Moshannon district the Lower Kittanning coal is mined extensively. It ranges from 3 to 5 feet thick, and its quality is irregular. On Cherry Run it averages 3 feet 6 inches thick, and has 4 inches of bony coal at the top; at Moshannon 3 feet thick, including 9 inches of bony coal at the top; at Clarence (Snow Shoe) 4 feet 8 inches thick, including a 15 inch lower bench, with many thin bone and pyrite partings, a 6 inch parting of clay and bone; 10 inches of good coal, a 4 inch bony parting, 17 inches of good coal, and a bony top 4 inches thick.

On Susquehanna River and Beech Creek the Lower Kittanning is thin, averaging less than 2 feet 6 inches thick, is dirty and present in isolated areas in the hills.

The Lower Kittanning coal ranges from 20 to 24 per cent volatile matter, 59 to 67 per cent fixed carbon, 6 to 16 per cent ash, 0.6 to 3 per cent sulphur. It is^a soft friable coal with stick and block structure, and mines out in fair sized lumps.

Middle Kittanning ("C") Coal. This bed is generally thin and unimportant in Center County, although it is locally 4 feet thick. Where thickest it is full of thin bone and pyrite partings that make the coal extremely impure. It is mined only for house coal.

Upper Kittanning ("C'") Coal. This bed, lying at an average interval of 75 feet above the Lower Kittanning, is an important coal in Center County. In the Osceola-Philipsburg district it ranges from 2 feet to 3 feet 6 inches thick. The coal is hard, and mines out in blocks. It carries no bone or shale partings, but "sulphur" streaks are numerous. The roof is generally rolly,

The Upper Kittanning coal has been important in the Snow Shoe-Moshannon district, but now is practically exhausted. Its average section shows a triple bed, an upper bench 2 feet 4 inches to 2 feet 7 inches thick; a middle bench 14 to 18 inches, and a lower bench from 5 to 12 inches thick. The partings are generally less than 2 inches thick. It is a bright hard coal, having good quality. The roof is very rolly.

Lower Freeport ("D", Moshannon) Coal. The Lower Freeport coal, so important in Clearfield County, has been eroded in Center County, with the exception of a few isolated areas along Moshannon Creek in the Osceola-Philipsburg district, and a few hilltops in the Snow Shoe-Moshannon district. Along Moshannon Creek it ranges from 2 to 5 feet thick, and is locally dirty. It generally occurs in two benches, the bottom and main one being separated from an upper bench by 2 to 4 inches of bony coal. The upper bench, usually from 6 to 12 inches thick, is partly canneloid coal.

On Cherry Run, in the Snow Shoe-Moshannon district, the Lower Freeport is locally 6 feet thick. The coal has fair quality, and has but one thin parting 18 inches from the bottom. At Clarence it is 4

feet thick, including 1 inch of bone, 6 inches above the bottom; and at Moshannon 3 feet 6 inches thick.

Upper Freeport ("F") Coal. This bed caps about twenty of the highest knobs on the western flank of Allegheny Mountain, and now is practically worked out. It ranges from 2 feet 6 inches to 5 feet thick, locally carries 2 inches of bone near the middle, and is usually a good hard coal. Formerly it has been coked with much success in the Snow Shoe-Moshannon district. Both roof and bottom of the bed are roolly.

CAMERON COUNTY.

Cameron County is^a deeply dissected plateau 2000 feet above sea level, with main streams cutting down to 750 feet above tide. The county is crossed in a northeast-southwest direction by a series of anticlines and synclines. Only one of the synclines is deep enough to preserve the coal bearing formations from erosion. The axis of this basin extends midway between West Branch and Sterling, and crosses Sinnamahoning Creek midway between Emporium and Cameron. There are also a few isolated areas of coal in the highest hills in the northwestern part of the county.

The coal beds are in the lower part of the Allegheny formation and in the Pottsville formation. They are mined only for local fuel at the present time.

Marshburg (Sharon?) Coal; This bed is thin in Cameron County, averaging less than 12 inches, and having a maximum thickness of 3 feet. It is not mined.

Alton (Mercer?) Coals. The coals of this group, usually three in number, are generally thin and high in ash.

The Upper Alton coal is 3 feet thick on Canal Run. It generally is split into two benches by a shale parting near the middle. It is high in ash. On Sterling Run the coal is 3 feet 8 inches thick, but is extremely high in ash and sulphur.

The Middle and Lower Alton coals average less than 12 inches thick, and are very impure.

Clarion (Clermont, "A") Coal. This bed, lying about 80 feet below the Lower Kittanning coal, has been opened at several places in the Cameron Basin. It ranges from 2 to 4 feet thick, and is locally a good clean coal, but high in sulphur. This bed is not worked at present.

Lower Kittanning ("B", Dagus) Coal. This coal is geologically the highest in Cameron County, and is present only in isolated areas



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in the Cameron Basin. Here it averages 3 feet thick, having a maximum thickness of 3 feet 8 inches. It occurs in a single bench, but contains numerous thin local bone partings.

CLINTON COUNTY.

The lower part of the Allegheny formation and the Pottsville formation are the only coal bearing rocks in Clinton County. These formations are confined to three basins, crossing the county in a general northeast-southwest direction. The coal areas are small, and confined to the highest points in these basins.

The Tangascootack basin is bounded on the south and east by Allegheny Mountain, and on the west by Furney anticline. The Wetham basin, lying northwest of Furney anticline, is small, and contains but few isolated areas of coal. The Renovo-Karthaus basin has preserved several small areas of coal in the hills north of Susquehanna River in East and West Keating townships, Leidy, Noyes, and Chapman townships.

In 1918 Clinton County stood twentieth in Pennsylvania as a bituminous coal producing county. In that year 360,123 tons; valued at \$1,036,353, were produced; 341,187 tons, valued at \$989,296 were loaded at the mines for shipment; 15,836 tons were sold to local trade and used by employees; 3,100 tons were used at the mines for steam and heat.

The coal mining districts of Clinton County are served by the Pennsylvania and New York Central Railroads.

COAL BEDS.

Pottsville Coals. The Pottsville formation contains four coals. The lowest one is known locally as the "Marshburg" coal, and is probably the Sharon of Mercer County. It is thin and unimportant in Clinton County, having a maximum thickness of 2 feet, and averaging less than 12 inches.

The three coals of the Alton group lie below the Johnson Run sandstone, the top of the Pottsville, and are probably the equivalent of the Mercer coals of Mercer County. The Lower Alton coal, lying about 35 feet above the Marshburg coal, is generally divided into three benches, 21, 9, and 3 inches thick, separated by shale partings; usually about 3 inches thick. The upper bench has good quality, but the two lower benches are high in ash and sulphur. The Middle Alton coal is thin, having a maximum thickness of 12 inches, and averaging less than 6 inches. The Upper Alton coal ranges from 4 to 5 feet thick, with a characteristic shale parting 12 inches thick, about 2 feet below the top. The top bench is excellent coal, but the lower

one is full of "knife blades" of pyrite and bone.

Allegheny Coals. The coals of the Allegheny formation in Clinton County have not been definitely correlated. The coal geologically lowest is probably the Brookville. This bed is mined in Bald Eagle township, where it ranges from 3 to 5 feet thick, its only distinct impurity being a thin bone parting near the top. The coal is rather high in sulphur. North of Susquehanna river in the Tangascootack basin, it averages 3 feet thick and has fair quality. This bed ranges from 2 to 4 feet thick in the Renovo basin, and is generally split near the middle by a 1 inch bone parting. The coal is high in sulphur.

A coal lying about 70 feet above the one tentatively correlated as the Brookville, is probably the Lower Kittanning. This bed ranges from 4 inches to 4 feet thick in the Tangascootack basin, and is extremely irregular. Roof rolls make mining uncertain. A coal which is probably the same bed, is extensively mined at Bitumen, where it ranges from 3 feet 6 inches to 5 feet 2 inches thick, averaging 4 feet 4 inches. The coal is very high in sulphur, but carries only one thin bone parting, usually near the middle of the bed. This coal averages 20 per cent volatile matter, 67 per cent fixed carbon, 8.6 per cent ash, and 3 per cent sulphur.

The topmost coal of the Allegheny formation is contained in the tops of a few high hills, and lies about 110 feet above the coal last described. It is generally about 4 feet 6 inches thick, separated into two benches by a bone parting 4 inches thick near the middle.

LYCOMING COUNTY.

The coal bearing formations of Lycoming County are confined to the Little Pine Creek basin in Pine and McHenry townships, and the McIntyre-Ralston basin in Jackson, McIntyre and McNett townships. These basins are small canoe-shaped depressions, which are evidently parts of a syncline crossing the county in a general northeast-southwest direction. The Little Pine Creek basin is eleven miles long and two miles wide, and the McIntyre-Ralston basin fifteen miles long and three miles wide. Only the highest points in these basins contain coal beds.

COAL BEDS.

The coal beds of Lycoming County have not been definitely correlated with the main bituminous coal field, but it is probable that the existing correlations are accurate. The Pottsville formation contains no coal beds of commercial value, and the Lower Kittanning bed in the Allegheny formation is the only one that is mined for shipping coal.

Brookville (or Clarion (?)) Coal. This bed lies a few feet above the Johnson Run (Homewood ?) sandstone. It is a thick bed composed of alternating thin layers of coal and shale and has no commercial value.

Lower Kittanning ("B") Coal. This bed is the most important coal in Lycoming County. It is locally known as the "Big Bed," and has been mined at many places. In the Little Pine Creek basin it ranges from 3 to 7 feet thick, and is generally divided into three benches by shale partings ranging from 3 to 18 inches thick. In the McIntyre-Ralston basin the bed ranges from 2 to 3 feet thick, including a 4 or 5 inch parting near the bottom. The coal is a semi-bituminous steam coal of fair quality, low in sulphur but high in ash. The coal is soft and friable, dull black in color, and uneven in fracture.

Middle Kittanning ("C") Coal. The Middle Kittanning coal, lying about 20 feet above the Lower Kittanning, ranges from 12 inches to 7 feet thick, and is very dirty. Where thickest it has many thick shale partings. It is not mined at present.

Upper Kittanning ("C'") Coal. This bed, lying about 50 feet below the Lower Freeport, is thick but composed of thin bands of good coal in several feet of bituminous shale. It has never been opened.

Lower Freeport ("D") Coal. The Lower Freeport coal, lying from 80 to 90 feet below the Upper Freeport, ranges from 5 to 11 feet thick, but is entirely worthless because of many thick shale partings.

Upper Freeport ("E") Coal. The Upper Freeport coal, at the top of the Allegheny formation, is important in the McIntyre-Ralston basin, where it ranges from 2 to 7 feet thick. It is generally divided by one or more thick shale partings, into two or three benches, the actual merchantable coal averaging less than 3 feet thick. In one small area, the bed is nearly 7 feet thick, and is very clean. The Upper Freeport coal averages 7 per cent ash, 17 per cent volatile matter, less than 1 per cent sulphur, and ranges from 71 to 78 per cent fixed carbon. It is an excellent steam coal.

